

Efficiency of electronic document management systems: a case study

Kenan ABACI

Graduate School of Social Sciences, Near East University, Nicosia, Turkish Republic Of
Northern Cyprus

Assoc. Prof. I. Tolga MEDENI

Department of Management Information System, Yildirim Beyazıt University, Ankara,
Turkey

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Abstract: The research was designed to 'present a good practice example' for other organisations that plan to use Electronic Document Management System (EDMS) in the future. The purpose of this study is to investigate how effective the EDMS is in terms of managerial control, efficiency, job satisfaction, efficiency and safety. The research model is a descriptive and cross-sectional study. The study population consists of employees working in the central and provincial offices of the Ministry of Science, Industry and Technology in Turkey. Questionnaires were submitted to 3248 people via Google Drive, and 880 responses were received. The questionnaire consisted of 42 questions in total 10 personal information questions. For data analysis, descriptive statistical values, such as frequency, percentage, mean, minimum, maximum and standard error are used. When the obstacles to EDMS applications were reviewed, it can be seen that "technical infrastructure deficiency" the first place. The most important expectations of the participants from EDMS applications are improved service (40.9%) and quality and rich information communication (26.2%). Results indicated that the EDMS applications had positive effects on job satisfaction and effectiveness. Administrative control, productivity, job satisfaction, efficiency and security perceptions affect each other positively. Indicates that all sub-dimensions are influencing each other positively.

Keywords: Electronic Document Management System, Public Officers, Job Satisfaction, Efficiency, Productivity, Safety.

Introduction

The United States Bureau of Efficiency was established in 1913 to resolve unmanageable number of documentation problems. With the initialization, the first efforts were made to save crucial resources in terms of monetary value in the governmental expenditures (Penn, Pennix and Gow, 1994). Along with these efforts, the mindset claiming control of document production as a necessity began to become widespread. Developments in recording, storing and copying technology, which are shown as the most important reasons for the increase in document production, have led to the adoption of that mindset. In 1934, the National Archives of United States was established. This led to the idea that documents have a 'life cycle' that expresses life process as a feature of archiving and hiding from birth to death and having access when it is needed, just as living things. This concept is an important building block playing a role in the formation of modern document management (Hare et al., 2006).

With advances in computer and communication technologies, the use of e-business applications in public institutions has become rapidly widespread. This in turn brought the need for the development of various standards for the production and use of electronic documents. This need has been recognized especially by developed countries since 2000 and various standardization studies have been initiated.

Information is the fuel that drives government programmes and services (Munge at al., 2014). At the beginning of the 21 st century, administrative procedures have slowed down, document access has become difficult and storage troubles have arisen because of the increase in document production and the financial losses caused by this increase, and the lack of work on sufficient regulations to winnow out and dispose of redundant documents. Public sector organizations throughout the world are increasingly adopting Information and Communication Technologies (ICTs) based systems to improve information management and service delivery. However, it is a big challenge to implement information systems in the public sector because technology adoption and use depends on multiple factors. For instance, overall technology adoption at both the institutional and individual levels may be influenced by the characteristics of the area in which the information system is implemented (Mosweu at al., 2017). These developments have been such that the current century is arguably epitomized by a knowledge-based economy, where knowledge, information and ideas are the main source of economic growth. Due to this and other social and technological changes, such as advances and developments in computer and communication technologies, ongoing globalization, increased deregulation and so on, new patterns of work and business practices are being developed (Jawat at al., 2018).

In institutions and organisations, information and document resources are widely used as tools for decision support, business process management, structured communication, auditing and verification. The effective management of these resources also plays a key role in improving corporate success. Public institutions and organisations must produce and accept documents, then store and reuse those that are evidence of their actions to carry out activities, perform management actions and fulfil their legal obligations (Gülenç, 2016).

If electronic document management systems (EDMS) were used in public institutions, those public institutions would take advantage of great benefits. In addition to the cost, labor force, time and space advantages, those systems also offer benefits of security and archiving for the institutions. Considering the benefits for civil service, it can be claimed that working hours can be changed. Operations can be performed during evening, lunch break or weekend shifts if necessary. If the process of distribution of the documents and records by mailing them out was handled, another cost would be reduced. Even more importantly, the correspondences would be exchanged directly. Reduced workload will offer the advantage of efficiency in resource utilization. Unlike the previous filing systems, it would be possible to access files or information more quickly. Electronic information and document management systems provide institutions and organisations with the opportunity to use their stored information and documents in an effective and efficient way.

1. Literature

1.1. Electronic Document Management Systems

The basic idea behind the document management is to be able to give institutional memory to the organization when it is needed to show evidence of the activities in the the format of relations, content and documents (Arslan at al., 2017). Many managers have

become aware that efficient control of information flow leads to effective management. Document Management (DM) is increasingly recognized as one of the most reliable methods for managing an organization's flow of information in both the public and private sectors (Haitham et al., 2016).

Electronic documents refers to different types of documents that are created, stored, distributed and disposed of on computers in conjunction with business activities within other electronic devices on digital platforms (Singh and Sharma, 2009). Documents created by converting paper documents into digital formats are also considered as electronic documents. However, they must be marked with a time stamp indicating that these documents have not been changed, so that they can be seen as an original electronic document converted from paper into a digital format (Kashem et al., 2014).

1.2. The Impact of EDMS on Employees

The performance of public sector employees has become significant in ensuring productivity, and technology is one of the most crucial factors in improving their performance. When employees can access information and documents easily, their performances can be affected positively, leading to an overall increase in productivity in the public sector (Kimbugwe et al., 2009).

Job satisfaction and motivation levels among civil servants can also be increased by EDMS, which can enable employees to work more efficiently, thus reducing their workload. Users of EDMS can also keep themselves updated regarding the latest technological developments. Employees need to be aware of new technology and use technology in business processes, which will reduce workloads by increasing business productivity.

1.3. The Impact of EDMS on the Organisation

As new technologies have been emerged, organizations have moved from traditional EDMS to an electronic form of EDMS since it facilitates the managerial work through file integration and control. Based on the previous studies, an electronic EDMS provide many advantages including management support, budgetary, Security, Cooperation, performance, privacy and Systems integration (Abdulkadhim et al., 2015).

Effective functioning in public institutions is an important aspect of ensuring the development of the national economy. The more efficiently and effectively public institutions function, the more powerful the national economy will become (Warner, 2016). In this regard, public institutions should manage technology and information together for the efficient operation and updating of their systems, using continuously developing technologies (Baird et al., 2011).

EDMS allows public institutions to interact with different institutions and enterprises, thus ensuring the rapid distribution of information. EDMS plays an important role in the flow of information between public institutions and the private sector. Information requested by the private sector or the public is quickly and easily shared via the EDMS system. Moving from a traditional paper work system to an Electronic Document Management System helps educational institutions to reduce costs, automating processes increased document security and minimizing errors.

One of the reasons for switching to EDMS is that institutions aim to reduce costs. Even though EDMS initially requires investment costs, this is compensated for by reducing the cost of use (Kwatsha, 2010). However, the software and hardware used by these systems need to be updated constantly, while maintenance is also a factor causing additional costs. Errors and glitches that may occur in the EDMS may cause the system to come to a full stop, requiring the services of experts to prevent or eliminate such problems and resulting in additional costs. Employees should undergo a comprehensive training

programme to ensure that they can use the EDMS systems correctly and properly, and these trainings would also involve additional costs (Öğüt, 2012).

Public institutions need to manage their knowledge database to strengthen their links with the outside world and share their services. There are both direct and indirect benefits of investments made in these types of systems. Direct benefits include increase in productivity and savings in manpower, reduction in processing, plant, hardware (computer) and secretarial costs. Indirect benefits include improving resource control, increased organisational flexibility, timely information access, job satisfaction, beneficiary (customer) satisfaction and employee motivation (Özbay et al., 2014).

2. Methodology

2.1. Research objective

The purpose of this study was to investigate the adoption and use of electronic document management system (EDMS) in the public service in Turkey with the aim of establishing barriers and enablers, and best practices which each country could adopt from the other. It is hoped that the study will stimulate further research interest and raise awareness in government departments with regard to EDMS policy implementation, especially in the area of electronic content management. In addition, the research was designed to 'present a good practice example' for other organisations in Turkey that plan to use EDMS in the future.

2.2. Research Design and Hypotheses

The research models descriptive and cross-sectional, and a questionnaire survey was used as the main data collection tool.

The research hypotheses are as follows:

H₁: EDMS ensures managerial control.

H₂: EDMS ensures productivity of work.

H₃: EDMS ensures job satisfaction.

H₄: EDMS ensures efficiency.

H₅: The personal information security of the employee's computer is safeguarded by using the EDMS.

2.3. Population and Sample

The universe of the workforce is composed of staff working in the central and provincial offices of the Ministry of Science, Industry and Technology as of 09/12/2017. Number of staff working at the center; 1421 (43.75%) and the number of personnel working in the provinces; 1827 (56.25%), 3248 employees in total. A total of 3248 questionnaire forms were sent and 880 (27.09%) forms were returned. The universe is 3248. According to Sekaran and Bougie (2013), a sample size of 880 is suitable for a population of 3248. The questionnaire was applied between January and March 2018.

2.4. Data Collection Tool

The 42 questions about EDMS were constructed using a 5-point Likert-type scale consisting of 5 subscales: Managerial Control, Efficiency, Job Satisfaction, Productivity and Security. The questions regarding the effects of EDMS applications on job satisfaction and efficiency were also designed using a 5-point Likert-type scale.

2.5. Data Analysis

Factor analysis and item analysis were conducted to test the reliability and validity. Cronbach's alpha values of the sub-dimensions were also investigated. We used descriptive statistics, parametric or nonparametric tests in the analysis of the data. The frequency, percentage, mean and standard deviation were the descriptive statistics.

The question of whether tests would be parametric or nonparametric was solved based on the Kolmogorov–Smirnov Test, to determine whether the sub-dimensions would meet normal distribution conditions. Given that 'p' values were at the 5% significance level, the sub-dimensions did not meet normal distribution conditions, indicating that parametric tests could not reveal statistically significant results. Therefore, nonparametric tests, namely, Mann–Whitney U Test and Kruskal–Wallis H tests, were applied. To determine which group was seen to have statistically significant differences at the 5% significance level, the Bonferroni test was used.

3. Results

The research results are presented in this section.

Table 1. Demographic Variables

Gender	Frequency	%
Female	178	20.2
Male	702	79.8
Age	Frequency	%
25 and younger	33	3.8
26-35	288	32.7
34-45	311	35.3
46-55	189	21.5
56 and older	59	6.7
Educational background	Frequency	%
High-school	69	7.8
Associate degree	87	9.9
Bachelor's degree	536	60.9
Master's degree	171	19.4
PhD and higher degree	17	1.9
The departments from where the graduation degree were obtained	Frequency	%
Natural-Physical Sciences	34	3.9
Engineering	415	47.2
Social Sciences-Law	243	27.6
Others	188	21.3
The number of years worked in the organisation	Frequency	%
Less than 5 years	88	10.0

6-10 years	172	19.5
11-15 years	260	29.5
16-20 years	185	21.0
21-25 years	102	11.6
More than 26 years	73	8.3

Table 1, 79.8% of the participants were male, 35.3% of them were between the ages of 34 and 45, 60.9% of them had bachelor's degree, 47.2% were graduates of engineering and 29.5% worked in the organisation for 11–15 years.

Table 2. Most Important Expectations from the EDMS Applications in the Organisation

Expectations	Frequency	%
Improved service	360	40.9
Quality and rich information communication	231	26.2
Decrease in costs	102	11.6
Equal accessibility for everyone	97	11.0
Increased efficiency and productivity	41	4.7
Speed of service delivery	32	3.6
Transparency in public administration	14	1.9
Did Not Answer	3	0.1

Table 2, when the most important expectations regarding EDMS applications in the organisation were reviewed, it can be seen that 40.9% of the participants gave the improved service response. In addition, 26.2% of the participants stated that quality and rich information communication were provided. Moreover, only 1.9% of the participants expected transparent public administration via EDMS. There is no transparent public provision among participants' expectations from EDMS implementations. The most important expectations of the participants from EDMS applications are improved service understanding, quality and rich information communication.

Table 3. Services Provided Electronically in the Organisation

Services Provided in the Institution in Electronic Environment	Frequency	%
Services offered for	714	81.3

giving/providing information		
Electronic document management system	618	70,2
Services offered in the form of question and answer	358	40,7
Services offered as online transactions	384	43,6
General document management and archiving service	6	0,7
No service	5	0,6

Note: More than one option is marked by a participant.

Table 3, when the findings related to the services provided in the electronic environment in the institution are examined, 81.14% of the participants stated that they are services provided for providing / giving information.

Table 4. Obstacles to EDMS Applications

Obstacles to EDMS Applications	Minimum	Maximum	Mean	Standard Deviation	Order of Obstacle
Technical infrastructure inadequacy	1	8	6,16	2,136	1 st
Inability to give up old Abandonment of resident bureaucratic habits	1	8	5,77	2,08	2 nd
Employing qualified technical staff	1	8	5,76	2,205	3 rd
Security and hackers problems	1	8	4,75	2,328	4 th
The pressure of higher priority issues	1	8	4,36	2,123	5 th
Public administrators	1	8	4,09	2,401	6 th

should not look at the EDMS system warmly (lack of leadership support)					
Lack of legal regulations	1	8	3,96	2,115	7 th
Inability of appropriation	1	8	3,74	2,362	8 th

Table 4, when the questions are given to the participant, it was asked to score from 1 to 8 which is 1 is representing minimum score and 8 is representing maximum score. Each participant scored the questions based on their own perceptions. The higher the score, the more important it is for them. When the obstacles to EDMS applications were reviewed, table 4 can be seen that “technical infrastructure deficiency” the first place.

Table 5. Results of the Kolmogorov–Smirnov Test

Dimensions	The Mean	Standard Deviation	Normal Distribution ‘Z’	P
Managerial Control	35,45	7,30	5,360	0,000
Productivity	70,42	16,21	3,371	0,000
Job Satisfaction	20,45	6,21	4,100	0,000
Efficiency	19,22	4,42	3,891	0,000
Security	12,40	3,59	2,708	0,000

Table 5, the Kolmogorov–Smirnov Test was used to test the normal distribution in the study. According to the results of the Kolmogorov–Smirnov test, the sub-dimensions of managerial control, productivity, job satisfaction, efficiency and security sub-dimensions failed to meet normal distribution conditions ($p < 0.05$). In this case, the Mann–Whitney U Test and the Kruskal–Wallis H Test were used as parametric or nonparametric tests.

The H_1 hypothesis was accepted in the study. When the mean value ($35,45 \pm 7,30$) is examined, it is seen that the majority of the participants are satisfied. With EDMS, activities such as control of work processes, follow-up, employee supervision, controllability, workforce performance and decision making are realized more effectively.

The H_2 hypothesis was accepted in the study. When the mean value ($70,42 \pm 16,21$) is examined, it is seen that the majority of the participants are satisfied. EMS shows that productivity is positive in terms of productivity. With EDMS, time saving is provided, cooperation between personnel is increased, documents are provided quickly, working is possible without time and space, and all transactions can be recorded.

The H_3 hypothesis was accepted in the study. When the mean value ($20,45 \pm 6,21$) is examined, it is seen that the majority of the participants are satisfied. Personnel involved in the survey indicate that EDMS applications create institutional memory, facilitate ease of use, allow for proper reporting, and shorten signature processes. In addition, it is thought that information and documents are correct in EDMS.

The H_4 hypothesis was accepted in the study. When the mean value (19.22 ± 4.42) is examined, it is seen that the majority of the participants were satisfied. It can be said that EDMS applications generally have positive effects on efficiency. Personnel involved in the survey indicate that EDMS applications create institutional memory, facilitate ease of use, allow for proper reporting, and shorten signature processes.

The H_5 hypothesis was rejected in the study. When the mean value (12.40 ± 3.59) is examined, it shows that participants have negative attitudes towards safety in general. When the findings related to security perception are examined in EDMS applications, participants have negative perception about EDMS and electronic backups and document security.

Table 6. Mann–Whitney U Test for the Perception of EDMS Based on Gender

Dimensions	Gender	The Mean \pm SD	Z	P
Managerial Control	Female	37,336 \pm 6,70	3,595	0,000
	Male	34,97 \pm 7,38		
Productivity	Female	73,35 \pm 13,68	1,932	0,053
	Male	69,67 \pm 16,72		
Job Satisfaction	Female	20,88 \pm 6,86	1,537	0,124
	Male	20,33 \pm 6,04		
Efficiency	Female	20,08 \pm 3,58	1,937	0,053
	Male	19,00 \pm 4,58		
Security	Female	13,10 \pm 3,88	2,333	0,020
	Male	12,23 \pm 3,49		

Table 6, when the perception of the EDMS based on gender was reviewed, there was no significant difference in the scores for efficiency, job satisfaction and productivity sub-dimensions between different gender groups ($p > 0.05$). However, there was a statistically significant difference in scores for managerial control and efficiency ($p < 0.05$). In the managerial control (37.336 ± 6.70) and the security (13.10 ± 3.88) sub-dimensions, women obtained higher scores of perception than men.

Table 7. Kruskal–Wallis H Test for the Perception of EDMS Based on Age

Dimensions	Age	The Mean \pm SD	χ^2	P
Managerial Control	25 and younger	32,60 \pm 8,10	17,215	0,000
	26–35	34,78 \pm 7,67		
	34–45	35,08 \pm 8,11		
	46–55	36,02 \pm 4,82		
	56 and older	38,44 \pm 5,98		
Productivity	25 and younger	65,60 \pm 14,39	20,578	0,000
	26–35	69,11 \pm 15,61		
	34–45	71,04 \pm 16,29		
	46–55	72,83 \pm 13,86		
	56 and older	73,49 \pm 23,95		
Job	25 and younger	17,09 \pm 5,50	15,147	0,000

Satisfaction	26–35	18,92 ± 6,16		
	34–45	20,99 ± 6,47		
	46–55	22,49 ± 4,37		
	56 and older	22,53 ± 7,87		
Efficiency	25 and younger	16,54 ± 5,29	18,009	0,000
	26–35	18,12 ± 5,26		
	34–45	19,79 ± 3,76		
	46–55	20,23 ± 3,11		
	56 and older	20,77 ± 4,64		
Security	25 and younger	10,45 ± 3,01	20,835	0,000
	26–35	11,77 ± 3,42		
	34–45	12,32 ± 3,82		
	46–55	12,62 ± 3,00		
	56 and older	13,84 ± 3,99		

Table 7, when the perception of EDMS based on age is reviewed, we can see a significant difference between age groups in terms of the managerial control, productivity, job satisfaction, efficiency and safety sub-dimensions ($p < 0.05$). According to the Bonferroni test results, the perception scores of individuals from the age group of 25 and younger and those of individuals from the age group of 46 years and over differ in all the subscales. Younger individuals' perception scores for the EDMS in managerial control, productivity, job satisfaction, efficiency and security are lower than those from the older age groups.

Table 8. Kruskal–Wallis H Test for the Perception of EDMS Based on Educational Background

Dimensions	Educational background	The Mean ± SD	χ^2	P
Managerial Control	High-school	36,08 ± 6,67	1,159	0,763
	Associate	35,66 ± 3,20		
	Bachelor's	35,44 ± 7,48		
	Master's	35,16 ± 8,76		
	PhD and higher	35,29 ± 1,95		
Productivity	High-school	73,05 ± 13,63	4,995	0,172
	Associate	73,49 ± 11,95		
	Bachelor's	70,43 ± 16,43		
	Master's	68,30 ± 17,93		
	PhD and higher	64,94 ± 16,72		
Job Satisfaction	High-school	20,73 ± 5,85	6,226	0,092
	Associate	22,22 ± 3,79		
	Bachelor's	20,37 ± 6,60		
	Master's	19,63 ± 6,19		
	PhD and higher	20,82 ± 3,02		
Efficiency	High-school	19,18 ± 4,00	5,375	0,146
	Associate	20,35 ± 2,93		
	Bachelor's	19,23 ± 4,56		
	Master's	18,70 ± 4,81		
	PhD and higher	18,29 ± 2,64		
Security	High-school	11,71 ± 3,86	5,742	0,125
	Associate	12,83 ± 2,35		
	Bachelor's	12,48 ± 3,68		
	Master's	12,38 ± 3,81		
	Ph.D and higher	10,64 ± 3,59		

Table 8, when the perception of EDMS based on educational background was reviewed, we found no significant difference between the groups with different educational backgrounds in the managerial control, productivity, job satisfaction, efficiency and security sub-dimensions ($p>0.05$). The scores for the EDMS perception of the employees did not vary by educational background.

Table 9. Kruskal–Wallis H Test for the Perception of EDMS Based on The Department of Graduation

Dimensions	The Department of Graduation	The Mean \pm SD	χ^2	P
Managerial Control	Natural-Physical Sciences	36,12 \pm 6,12	3,694	0,158
	Engineering	35,68 \pm 3,63		
	Social Sciences-Law	35,72 \pm 7,85		
	Others	35,35 \pm 8,71		
Productivity	Natural-Physical Sciences	72,52 \pm 11,22	2,963	0,227
	Engineering	70,48 \pm 16,52		
	Social Sciences-Law	68,27 \pm 17,82		
	Others	68,52 \pm 16,93		
Job Satisfaction	Natural-Physical Sciences	22,18 \pm 3,63	2,705	0,259
	Engineering	20,42 \pm 6,72		
	Social Sciences-Law	19,58 \pm 6,22		
	Others	21,92 \pm 3,82		

Efficiency	Natural-Physical Sciences	20,22 ± 2,92	3,074	0,215
	Engineering	19,58 ± 4,45		
	Social Sciences-Law	18,96 ± 4,85		
	Others	18,52 ± 2,14		
Security	Natural-Physical Sciences	11,85 ± 2,62	4,400	0,111
	Engineering	11,27 ± 3,52		
	Social Sciences-Law	12,42 ± 3,73		
	Others	10,81 ± 3,14		

Table 9, when the perception of EDMS based on the department of graduation degree was reviewed, we found no significant difference between the groups graduated from different departments in the managerial control, productivity, job satisfaction, efficiency and security sub-dimensions ($p > 0.05$). The scores for EDMS perception of the employees did not vary by the department of graduation degree. It is thought that the perception of the EDMS may vary depending on the educational situation, as the tendency of individuals to access information and to use the information effectively increases as the educational status of the individuals increases. However, when the results are analyzed, it is determined that the EDMS perception does not vary according to the educational status.

Table 10. Kruskal–Wallis H Test for the Perception of EDMS Based on the Number of Years Worked in Organisation

Dimen sions	Number of Years Worked in Organisation	The Mean ± SD	x²	P
Manag erial Control	Less than 5 years	32,59 ± 8,12	20,521	0,000
	6–10 years	34,77 ± 7,58		

	11-15 years	36,08 ± 8,22		
	16-20 years	36,21 ± 8,82		
	21-25 years	37,52 ± 6,51		
	More than 26 years	38,42 ± 6,84		
Productivity	Less than 5 years	65,68 ± 8,63	22,563	0,000
	6-10 years	66,52 ± 8,51		
	11-15 years	67,39 ± 5,74		
	16-20 years	70,52 ± 8,32		
	21-25 years	71,84 ± 7,63		
	More than 26 years	72,20 ± 8,23		
Job Satisfaction	Less than 5 years	17,20 ± 3,68	21,583	0,000
	6-10 years	18,81 ± 4,52		
	11-15 years	20,98 ± 5,21		
	16-20 years	21,15 ± 6,27		
	21-25 years	21,62 ± 8,41		
	More than 26 years	22,84 ± 6,18		

Efficiency	Less than 5 years	16,55 ± 6,24	23, 541	0,0 00
	6–10 years	18,12 ± 5,61		
	11–15 years	19,77 ± 3,52		
	16–20 years	20,28 ± 3,54		
	21–25 years	20,77 ± 6,52		
	More than 26 years	21,79 ± 4,31		
Security	Less than 5 years	10,43 ± 2,52	23, 621	0,0 00
	6–10 years	11,72 ± 3,41		
	11–15 years	12,38 ± 2,69		
	16–20 years	12,39 ± 5,21		
	21–25 years	12,85 ± 6,52		
	More than 26 years	13,80 ± 8,12		

Table 10, when the perception of EDMS based on the number of years worked in organisation was reviewed, we find a significant difference between the groups which worked for different number of years worked in the organisation in the managerial control, productivity, job satisfaction, efficiency and security sub-dimensions ($p < 0.05$). According to the Bonferroni test results, in all sub-dimensions, the perception scores of individuals who worked in the organisation for less than 5 years were different from those of individuals who worked in the organisation for 21 years and over. Those who worked in the organisation for a short time have lower scores of EDMS perception than those who worked in the organisation for a long time in the managerial control, productivity, job satisfaction, efficiency and security sub-dimensions.

4. Conclusions

With the current rapid developments in the domain of information technology, the document management processes have been moved into digitized realm. From the system perspective, this digitized realm is called as the Electronic Document Management System (EDMS). Information is crucial for the decision making, for this reason it is necessary to quickly and accurately reach to this organizational asset. With respect to this context, it is important to determine how the changes in the lifecycle of the document is effect the perception of the users in terms of EDMS. Therefore, a case study was conducted in the MSIT.

In this study, the expectations from EDMS applications in the MSIT, the obstacles in EDMS applications and the effects of EDMS applications on job satisfaction and productivity were investigated. It is indicated that the most important expectation from the EDMS applications in the organisation was improved service. Civil servants also wanted quality and rich information communication. When the services provided electronically in the MIST were reviewed, we found that services offered for providing and giving information are at the forefront. When the obstacles to the EDMS applications were reviewed, we found the lack of funds to be the most important obstacle, but the lack of legal regulations was also considered an important obstacle. We can conclude that EDMS applications played an important role in increasing efficiency, while also affecting the job satisfaction of civil servants positively.

Desktop-based electronic document management system should be developed. Thus, the Java update does not cause problems in e-signature. With directing the end users step by step, the system assures stopping the problems before being created. The systems also logs all the transactions and the user activities with including the information of the users. In the process of written communication, control and authentication rights is given to the hierarchical managers. All the digital footprints on the documents also log to the able to give the ability of past activity monitoring. By these precautions, the systems blocks the possibility of unauthorized document destructions. On the indicators of the efficiency is the time usages. Time is the sole indicator, that can not be regained. Efficient organizations are the ones which can use time well. This indicator is the one which the government organization is mostly criticized about. The EDMS also helps administrators for efficient use of the time.

As a constraint of this research, only a single EDMS and its effect on a government body was investigated. For this reason, other EDMS structures and efficiency could not be included. However, the main finding of this research is the efficiency of this system over traditional manual document system. To be able to use EDMS, the government organizational should be register into the Registered Electronic Mail (REM) system. Only the organisation and government officers who has the e-signature authentication can use the system. Based on the findings of this research, this system increases the efficiency of the system security but not the efficiency of the usage time. The REM mechanism only gives authentication to the upper managers, not the lower level officers who are the real creator of the documents. This system increases efficiency of the security by giving all autheration to the single point but also decreases time usage efficiency. By given recommendation of the system users, by letting outside log-in mechanism would increase the system efficiency. Not only constant trainings is required not just at the initialization stage but also in different time intervals. The users lack-of system knowledge also decreases the efficiency of the systems. Help documents need to be prepared for the end users to explain the stages of installation details.

Results revealed that the technological infrastructure and technical qualities are insufficient within the scope of the EDMS applications. Thus, improving the technological infrastructure is important to ensure the efficient operation of the system and the conduct of the necessary R & D activities. The most appropriate system can be developed by working in coordination with other organisations and countries advanced where EDMS software is developed and by considering the knowledge and skills of the employees in the organisation.

The document management system that covers many of elements among the basic values in an organisation is a management area that should be implemented through interdisciplinary cooperation. For this reason, each element in the information and document management system should be evaluated separately and then detailed proposals should be prepared for each of these elements.

Some of the mistakes in the use of EDMS are caused by the human factor. To avoid mistakes arising from the personal preferences of employees, authorities should minimise the situations where personal preferences can be made. To solve this, standard templates can be created at the system inputs.

Security is one of the most important concerns of employees regarding EDMS. Organisations with similar administrative structures should be established to ensure information security. Responsibilities for the destruction of permanently erased data in the electronic environment should be determined, along with responsibilities for ensuring that information security would be shared among the units. While planning the measures to be taken, they should also be evaluated along with the technical and administrative aspects.

Distinguishing document management from the traditional understanding by revising the corporate structure is essential, along with the reorganisation of relevant units. In the aforementioned units, a knowledge manager specialist should be employed and this person must be able to work in coordination with other related units in carrying out document management activities.

While investments are made to ensure information security in organisations, it is important to consider user awareness. To overcome the legal weaknesses of information security, developing policies and organising awareness trainings on those policies should be considered. In-service training should be organised to ensure that employees work in accordance with regulations in the EDMS applications. The technical infrastructure of the institution should be reviewed and updated if needed. Document and archival processes and workflows should be organised. Institutions should be knowledgeable in these issues and take conscious steps to ensure good performance. When organisations use EDMS, they generally focus on the operational benefits of EDMS and generally ignore the benefits of strategic decision support. For this reason, they should also use EDMS to improve their decision support capabilities.

Resources

Abdulkadhim, H., Bahari, M., Bakri, A., & Ismail, W. (2015). A Research Framework Of Electronic Document Management Systems (Edms) Implementation Process In Government. *Journal of Theoretical and Applied Information Technology*, 81 (3), 420-431.

Aziz, A. A., Yusof, Z. M., Asma M., Jambari, D.I. (2018). Electronic Document and Records Management System Implementation in Malaysia: A Preliminary Study of Issues Embracing the Initiative. *In International Conference on Information, Springer Profesyonel*, 585-591.

Arslan M., Kaya T. (2017). A Research On Efficiency Of Edms As An E-Government Practise: Nevşehir Hacı Bektaş Veli University Edms Case, *Suleyman Demirel University The Journal of Faculty of Economics and Administrative Sciences*, 22 (15), 1999-2019.

Baird A., Haynes J., Massey F., Wild R. (2011). Public service output, input and productivity. *Economic & Labour Market Review*, 5 (2), 64-87.

Björk, B. C. (2003). Electronic Document Management in Construction—Research Issue and Results. *ITcon*, 8 (2003), 105-117.

Boateng, H., Agyemang F. G. (2016). A qualitative insight into key determinants of knowledge sharing in a public sector institution in Ghana. *SAGE*, 32 (1), 35-43.

Gülenç, M. (2016). Management Information Creation, Management Effectiveness and Effect on Productivity (E-School Example). Dumlupınar Üniversitesi, *Institute of Social Sciences, Master Thesis*, Kütahya, 8-10.

Hare, C., McLeod J. (2006). *How to Manage Records in the e-Environment*. London: Aslib.

Haitham, A., Raymond, C., Yukun B. (2016), Investigating the Critical Success Factors for Implementing Electronic Document Management Systems in Governments: Evidence From Jordan. *Information Systems Management*, 33 (4), 287-301.

Jawad S., Peter A. M., Donald H., Yusra M. (2018). The Palgrave Handbook of Knowledge Management, Introduction: Managing Knowledge in the Twenty-First Century. Switzerland: Springer International Publishing AG.

Kashem, M. A., Akhtar, N., Rahman, A. (2014). An Information System Model for e-Government of Digital Bangladesh. *International Journal of Computer Science and Network Security*, 14 (11), 62-69.

Katuu, S. (2016). Managing Digital Records in a Global Environment: An Assessment of the Landscape of International Standards and Best Practice Guidelines. *The Electronic Library*, 34 (5), 869-894.

Katuu, S. (2015). Managing Records in South African Public Health Care Institutions: A Critical Analysis. Phd thesis, University of South Africa.

Katuu, S. (2012). Enterprise Content Management (ECM) implementation in South Africa. *Records Management Journal*, 22 (1), 37-56.

Kimbugwe, K., Lewis, R., James, N. (2009). Labour inputs in public sector productivity: methods, issues and data. *Economic & Labour Market Review*. 3 (4), 52-59.

Kul, H. R. (2009), Basics and Applications of Information Systems for Operators. İstanbul: Papatya Yayıncılık Eğitim.

Kwatsha, N. (2010). Factors affecting the implementation of an electronic document and records management system. Master Thesis, University of Stellenbosch.

Mahmood, A., Okumuş I. T. (2017). Design And Implementation Of Electronic Document Management System. *Journal of Applied Sciences of Mehmet Akif Ersoy University*, 1 (1), 9-17.

Manikas, K. (2015). Records Management and Electronic Records Management: Opportunities and Limitations. A case study in Greek Companies. Master Thesis, Linnaeus University.

Munge, E., Rotich, D. C., Wamukoya, J. (2014). Archives & Information Science. *African Journal of Library*, 24 (1), 15-26.

Mosweu O., Joseph K.B., Mutsheva A. (2017). A Probe Into The Factors For Adoption And Usage Of Electronic Document And Records Management Systems In The Botswana Context. *SAGE*, 33 (1), 97-110.

National Archives of Australia (2004). Digital recordkeeping Guidelines for creating, managing and preserving digital records. [Online]. Retrieved from https://mayarbinaginting.weebly.com/uploads/1/0/6/1/10612501/digital_recordkeeping.pdf [Accessed 4 October 2018].

Owens, K. (1996). *Information Management Standards and Practices Division*. Canada: Managing audio-visual records in the Government of Canada

Öğüt, A. (2012). *Management in the Age of Information*. Ankara: Nobel book.

Özbay, T., Güçlü, A. N., Alır, G., Medeni, T. D., Öztöpcü, L., Medeni, T., Bora, S. (2014). Electronic Document Management (EDMS) Integrated Impact Assessment: Determination of a Method in the Public Sector and the First Results of the Field Study. *12th International Conference On Knowledge, Economy & Management Proceedings*, 451-464.

Penn, I. A., Pennix, G. B., Gow, K. F. (1994). *Records Management Handbook*. Hampshire: Gower.

Public Record Office (2002). *Requirements for Electronic Records Management systems*, Part 3: Metadata Standard, 2002 revision, final version, Kew, Public Record Office. <http://www.nationalarchives.gov.uk/documents/referencefinal.pdf> [Accessed 5 October 2018].

Sekaran, U. & Bougie, R., 2013, *Research methods for business: A skill-building Approach*, Wiley, New York.

Singh, A. K., Sharma, V. (2009). e-Governance And E-Government: A Study Of Some Initiatives *International Journal Of ebusiness And Egovernment Studies*, 1 (1), 1-14.

The United States Department of Defense (2002) *Design criteria standard for electronic records management software applications* (Report No: DoD 5015.2-STD). Retrieved from http://www.interpares.org/display_file.cfm?doc=dod_50152.pdf [Accessed 7 October 2018].

Warner, L. M. (2016). Productivity and Management in Public Sector. *Springer International Publishing*, 4 (5), 1-5.

Yazıcıoğlu, Y., Erdoğan, S. (2004.) *Spss Applied Scientific Research Methods*. Ankara: Detay Publishing.